

OVERCOMING TOMATO DISEASE

WHY SO MUCH TROUBLE?

Often people wonder why there are so many problems with diseases these days. They don't remember having all this trouble in the old days. There are two reasons for this;

1. We don't practice the right kind of crop rotation or good sanitation.
2. Really big greenhouse operations supplying really big chain stores can spread an epidemic over entire regions.

As I go over some of these diseases you will begin to understand the importance of these two points.

EARLY BLIGHT

This fungus seems to be the most common problem we experience on tomato plants and their fruit in our area. It starts as small black or brown spots on the lower leaves of the plant. The spots start to enlarge and often get a yellow halo around them. Inside the spots, you can notice rings; kind of like tree rings. Eventually the whole leaf turns brown and drops off. As the fruit begins to ripen it becomes infected too and starts to look rotten, usually up on the top near the stem. Those same tiny tree rings can be found on the rotten spots.



Other host plants of Early Blight are potatoes, peppers, eggplant and a few weeds that belong to this same family. The fungus overwinters on infected debris from any of these kind of plants. It can also survive on volunteer seedlings that came from an infected rotten tomato.

Warm humid conditions are conducive to infection, mostly starting with older leaves. Wind and splashing water disperse new spores repeating cycles of infection. A leaf penetrated by the fungus can't be cured but you can help prevent other leaves from becoming infected.

Preventing the disease;

- Good sanitation: Remove all old plants and weeds.
- Rotate crops: Don't plant tomatoes, peppers, potatoes or eggplant in the same part of the garden every year. Switch to beans, cabbage, broccoli, corn or grass.
- Keep foliage dry: Water with a soaker hose instead of a sprinkler. Mulch the plants with black plastic or a thick layer of straw.
- Keep the plants fertilized until the end of the season: Remember susceptibility increases with the age of the plant so keep the new growth coming.
- Use good transplants: Plants should be grown from pathogen free seed in a clean greenhouse.
- Spray regularly with a preventative fungicide: Daconil and Mancozeb work well but need to be applied every 7-10 days. Serenade is an organic alternative.

LATE BLIGHT

The disease occurs worldwide where ever tomatoes and potatoes are grown. It has been a problem since at least 1840 and was responsible for the Irish potato famine of 1845 and 1846. Since that time epidemics have happened periodically when conditions are favorable.

Late blight is not uncommon in Pennsylvania and every year there are reports of outbreaks in various places. The most recent major outbreak was in 2009. That year the disease spread all over the northeast and the main reason was that infected plants were distributed by big retail chain stores. In addition cool wet weather that the disease needs to develop persisted throughout the season.

Spores are produced at temperatures between 65° and 70° and very high humidity. The spores can travel by wind 30 or 40 miles. Once the spore lands on a tomato plant a film of water must be on the leaf for it to become infected. Survival of the spore is greatly reduced when conditions are dry.

Late blight can be identified by the brown blotches that develop on the leaves. The blotches can enlarge quickly and a white downy growth appears on the underside of the leaf. That white growth is where the spores come from that blow in the wind and infect other plants.



The disease can develop on stems, and both green and ripe fruit. If conditions are right the whole plant can turn brown in two weeks.

Fungicides can only prevent infection, they cannot cure so they must be applied before plants are exposed to spores.

Late blight survives between crops or over winter on infected potato tubers or green plant tissue. Spores can be produced on the infected new sprouts the following spring. Once the plant tissue is dead the disease can no longer survive.

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SEPTORIA LEAF SPOT

This is a common fungus and it can infect a tomato plant at any stage but it's usually after the fruit begins to set. It starts on the lower older leaves. Numerous small brown spots appear and as they get a little bigger, you can see that they have a gray center. The older spots will get a tiny black speck in the middle, that's where the spores spread from. Severely spotted leaves turn yellow and drop off. The fungus does not infect the fruit but too many leaves falling will weaken the plant.

Septoria spores are released between 60° and 80°F but are most active at temperatures of 77°F with high humidity or splashing water. The fungus is not soil borne but can over winter on diseased plant debris left on or in the soil. It infects other garden plants like potatoes and eggplant as well as many weeds and ornamental perennials.



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OTHER DISEASES AND DISORDERS

Anthracnose: Primarily affects fruit not the leaves or stems. It's usually not apparent until the fruit begins to ripen, then circular indented rotten spots form.

Fusarium and Verticillium: Soil borne diseases that pass up through the roots, blocking water conducting vessels causing the plant to wilt.

Blossom end rot: Caused by calcium deficiency, and extreme moisture fluctuations. Treat by mixing lime in the soil and adding gypsum when planting.

Growth cracks: Large cracks form on the fruit. Caused by rapid growth when drought conditions are followed by heavy rain. Prevent by keeping even soil moisture by regular watering and mulching.

Poor fruit set: Usually the result of extreme temperatures (below 55° or above 90° F) for extended periods, very dry soil, or too much shade. Tomatoes are about 95% self-pollinating so they don't require bees.